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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/617,025	07/11/2003	Makoto Komatsu	2003-0950A	2714

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EXAMINER
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ASINOVSKY, OLGA

ART UNIT	PAPER NUMBER
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1711

DATE MAILED: 05/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/617,025

Applicant(s)

KOMATSU ET AL.

Examiner

Olga Asinovsky

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4, 6, 12-14 and 18-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6, 12-14 and 18-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 03/30/2006 has been entered.

Applicants amend claim 1 to include the definition for a reactive functional group selected under Markush practice.

Claims 5, 7-11, 15-17 and 22-34 are cancelled.

### ***Claim Rejections - 35 USC § 112***

2. Claims 1-4, 6, 12-14 and 18-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 discloses a reactive functional group selected from the group consisting of the groups under Markush practice such that said group is introduced onto the polymer side chain. A grafted monomer is not clear. Is said group is an additional group introduced onto the polymer side chain?

Claims 6, 18, 19 and 20 disclose a process for making a solid reagent. There is no step in a process condition how to make said solid reagent. A polymer side chain is formed by graft-polymerizing a polymerizable hydrophilic monomer. It is not clear how "then

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converting the group capable of being converted into a reactive functional group. The term "capable" renders the claims indefinite, because it is not possible to determine under what conditions "converting the group capable of being converted into a reactive functional group."

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-4, 6, 12-14 and 18-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Garnett et al U.S. patent 3,880,736 or JP 7041574 (cited by applicants), or Frey et al U.S. Patent 5,863,654, or Sugo et al U.S. Patent 5,648,400.

The present invention is a grafted polymer in a solid state, wherein a polymer side chain is grafted on an organic polymer base such that said polymer side chain is formed from a hydrophilic polymerizable monomer. Any graft-polymerizing technique is readable in claim 1.

References have been discussed in previously mailed office action.

Garnett discloses backbone polymer grafted with a vinyl pyridine monomer via radiation to induce graft polymerization process. Any organic backbone polymer is readable in the present claims. The graft polymerizable vinyl pyridine monomer is readable in the present claims. In addition the vinyl pyridine can include various moieties including

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amino, halogen, nitro wherein said group do not exhibit an inhibiting effect on the reaction, column 2, lines 13-30. The polyvinylpyridine having functional group is readable in applicants' claimed polymer side chain having reactive functional group.

The polyvinylpyridine is hydrophilic polymer responsive/capable in further reaction or being converted into a reactive functional group on the polymer side chain. There is no step condition in the present process claims how "functional group of the polymer side chain can be converted into a reactive functional group." The backbone polymer can be in the form of a film, a woven fabric, a thread, or a powder, column 2, lines 50-56. the backbone polymer is readable in applicants' claim 2. The graft polymerization under gamma radiation process is readable in applicants' claim 3. The resulting grafted polymer is in a solid form having reactive functional groups. The claimed invention is fully anticipated by the disclosure of Garnett et al reference.

JP 7041574 discloses a backbone polymer such as a porous polyethylene membrane or ethylene-tetrafluoroethylene copolymer grafted with chloromethylstyrene and introducing quaternary amine moiety into said graft-polymerization membrane. The graft polymerization is produced via irradiating a porous membrane. The resulting grafted membrane is in a solid form, abstract. JP'574 discloses the applicants' claimed grafted polymer chain having functional group.

Frey discloses porous hollow fiber made of a polyolefin material (backbone polymer) that is grafted with polyvinylidene chloride and in further coated with a biocompatible

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carbon material, col. 3, lines 32-35 and 57-65; col. 4, lines 19-57; col. 8, lines 40-43 and col. 20, lines 40-57. The graft polymerization is produced via radiation induced graft polymerization, col. 6, lines 36-45, 55-65 and col. 13, line 60. The content of functional=reactive hydrogen chloride and a residue of (HCl) is controlled in the amount sufficient of being converted into a coating of a biocompatible carbon material, col. 9, lines 19-20 and 33-47. The grafted polyolefin is in the form of fiber and said grafted polyolefin is a solid reagent wherein the grafted polyvinylidene chloride serves as a reagent for at least of a halogenation reaction for the present claim 4. The claimed invention is fully anticipated by the disclosure of Frey invention.

Sugo discloses a process for producing polymeric electrolyte complex and ion-exchange resin. A polymeric substrate is grafted with polymerizable hydrophilic monomer through radiation-initiated graft polymerization process, column 4, lines 5-60. The polyolefin backbone is grafted with a polymerizable monomer that can have styrenesulfonic acid moiety, col. 3, lines 24-25. The sulfonic groups are reactive functional groups that serve as a reagent for at least of oxidation reaction, for the present claim 4. The obtained ion-exchange resin is a solid reagent.

### ***Double Patenting***

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140

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F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

1. Claims 1-4, 6, 12-14, 18-21 are rejected on the ground of nonstatutory

obviousness-type double patenting as being unpatentable over claim 1-5 of U.S. Patent No. 6,703,432. Although the conflicting claims are not identical, they are not patentably distinct from each other because the chemical formulation of a grafted polymer having a polymer side chain having functional group in claims 1-5 of Patent 6,703,432 is readable in applicants' claims. The difference between the present claims and claims 1-5 of Patent 6,703,432 is the requirement in the present claims that a grafted polymer is a solid reagent. It would have been obvious to one of ordinary skill in the art to consider that a water adsorbing/desorbing material in claims 1-5 of Patent 6,703,432 is a reactive solid reagent because the polymer side chain having a cation exchange group selected from sulfonate acid group, phosphate group and carboxyl group are reactive groups that impart reactivity property.

2. Claims 1-4, 6, 12-14, 18-21 are rejected under 35 U.S.C. 103(a) as being obvious over Fujiwara et al U.S. Patent 6,703,432.

3. The applied reference has a common inventor with the instant application.

Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art

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only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(I)(1) and § 706.02(I)(2). See paragraph 5 above for the explanation. A starting compound is not claimed in the present claim 1. In addition, reference discloses a polymer side chain containing a hydrophilic group grafted on the backbone of an organic polymer base, column 1, lines 65-67. A desired graft polymer side chain is introduced into an organic polymer base by irradiating the base, column 2, lines 43-63. The polymer base is woven/nonwoven fabric material. The polymerizable monomers have functional groups, column 3, lines 23-67. The hydrophilic functional groups are reactive groups that work as cation exchange groups or anion exchange groups. And, in addition, Patent 6,703,432 discloses that the cation exchange groups introduced onto the polymer side chain can be expected to not only adsorb water but also adsorb basic gases and remove positively charged particles,



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column 4, lines 14-17. The anion exchange groups introduced onto the polymer side chain can be expected to not only adsorb water but also adsorb basic gases and remove negative charge particles, column 4, lines 18-45. It would have been obvious to one of ordinary skill in the art to consider that a water adsorbing/desorbing material in Patent 6,703,432 is a reactive solid reagent because the polymer side chain having a cation exchange group selected from sulfonate acid group, phosphate group and carboxyl group or polymerizable monomers having an anion exchange group are reactive groups that impart reactivity property, and wherein the reactive functional groups are reagents for at least of oxidation reaction or reduction reaction.

#### ***Response to Arguments***

4. Applicant's arguments filed 03/30/2006 have been fully considered but they are not persuasive. The applicants' argument that none of the references cited by the Examiner teach or suggest a solid reagent comprising a reactive functional group, as recited in Applicants amended claims is not accepted. It is a burden on the applicants to provide the difference in order to overcome the rejections under *In re Fitzgerald* 205 USPQ 594.

The invention in claims 1-7 and 12-21 is fully anticipated by the disclosure of either of Garnett or JP 7041574, or Frey, or Sugo.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Olga Asinovsky whose telephone number is 571-272-1066. The examiner can normally be reached on 9:00 to 5:30 pm.

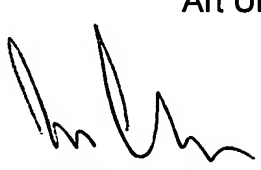
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on 571-272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Olga Asinovsky  
Examiner  
Art Unit 1711

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05/15/2006



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